Alumni: Chih-Chun Chien, University of California Merced

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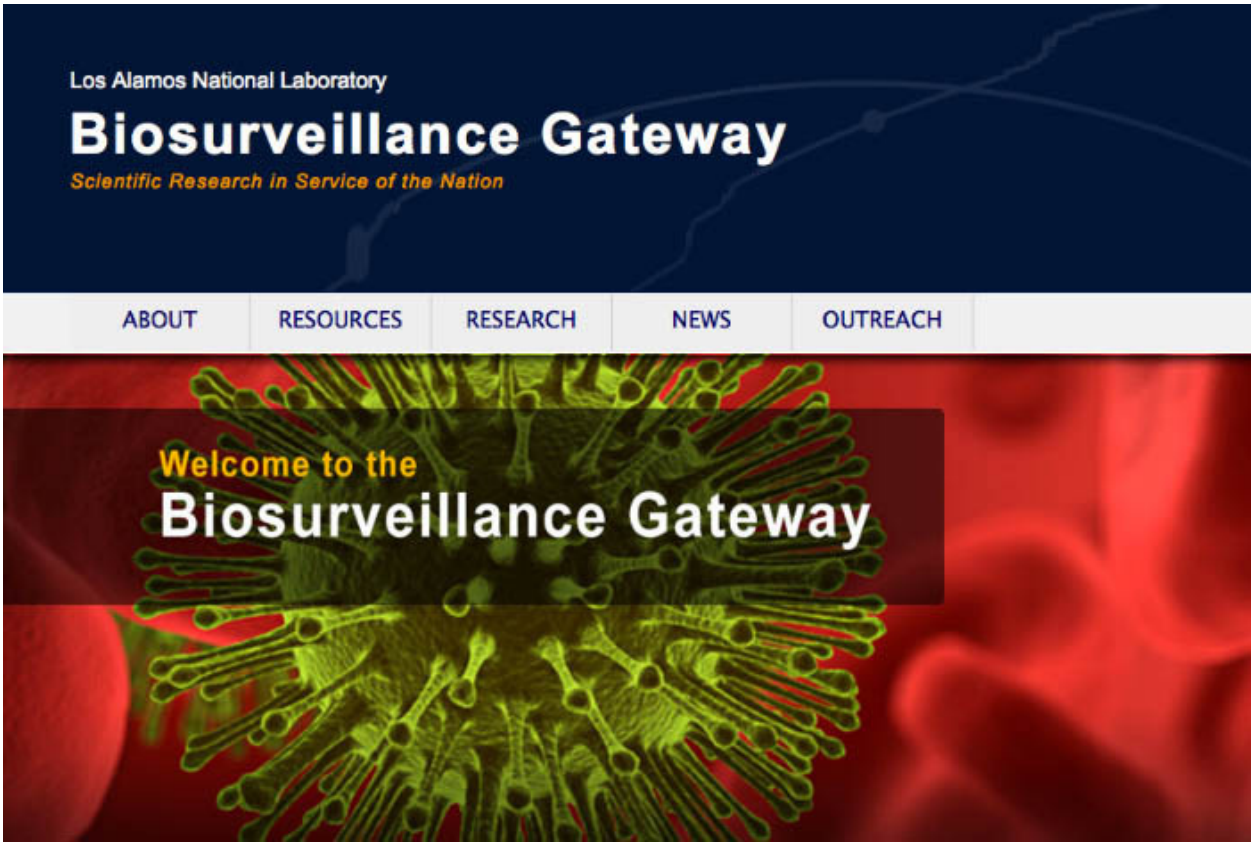

Chih-Chun Chien now at the University of California Merced

The work in which Chih-Chun Chien is currently engaged might eventually help detect illness through heat transfer along strands of our DNA and simulate ultrafast dynamics in quantum devices. Chien, currently an assistant professor at the University

of California at Merced, spent four years at the Lab ending in 2013, first as a Director's Postdoctoral Fellow and then as a J.R. Oppenheimer Postdoctoral Fellow.

Chien's wide-ranging interests include research at the atomic and molecular level, theoretical and experimental physics and the boundaries for when materials become superfluids.

"There's a split second when atoms in a material stop behaving as individuals and start interacting with each other differently and collectively," said Chien. "I'm interested in where that boundary is. When will it happen? How cold does the material have to be for superfluidity to begin? At what moment does Bose-Einstein condensation crossover into Bardeen-Cooper-Schrieffer superfluidity? "

Another interest of his is the research where he considers transfer of heat across strands of DNA. This falls under his pursuit of transport properties of biomaterial and nanodevices. This relates back to his time spent in the Physics of Condensed Matter and Complex Systems group.

"A researcher in Belgium made the discovery that different strands of DNA transfer heat differently," he said. "It's possible that by examining how heat moves across some of its strands that could reveal damaged genes that could lead to illness. At that point the application could become a diagnostic tool useful to medicine."

Chien thinks enough of his time at the Lab that he's now urging his students to spend time in Los Alamos.

"I'm encouraging my grad students to apply for positions at the Lab due to the positive experience I had there," said Chien, "it's a unique place where there are so many different disciplines within arm's reach."

Chien would like to acknowledge some of the people he collaborated with during his time at the Lab: Frederick Cooper, Eddy Timmermans, Michael Zwolak and Jianxin Zhu (all with Physics of Condensed Matter and Complex Systems), Kirill Velizhanin (Physics and Chemistry of Materials) and Bogdan Damski (now with Jagiellonian University).

For more information, visit his webpage.

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